

REMARKS/ARGUMENTS

Claims 1-52 have been examined. Claims 8, 10, 20, 22, 25, 34, 37, 44, and 46 have been amended. Claims 53-59 have been added. Applicants note with appreciation the indication that claims 3-7, 16-19, 21, 27-31, 40-43, 45 and 49-52 define allowable subject matter. New claims 53-59 are respectively claims 3, 16, 21, 27, 40, 45, and 49 rewritten in independent form including all base limitations. As such, claims 53-59 are in condition for allowance. Re-examination and reconsideration of remaining claims 1-52 are respectfully requested.

Formal Matters

As requested by the Examiner, Applicants have amended Figs. 1-4 and 12A by including a legend designating these figures as "Prior Art." The five (5) attached sheets of drawings includes such corrections to Figs. 1-4 and 12A. These sheets, which includes Figs. 1-4 and 12A-12B replace the original sheets including Figs. 1-4 and 12A-12B.

Rejection Under 35 U.S.C. § 102

Claims 25, 26 and 32-38 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent 5,762,458 issued to Wang et al. Claim 46 was rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent 5,184,601 issued to Putman. Such rejections are traversed in part and overcome in part as follows.

To more clearly claim the present invention, claim 25 has been amended. Claim 25 is directed to a robotic surgery system for performing a surgical procedure on a patient lying on an operating table within an operating room. The room has a support structure extending generally below the table and personnel-usable space adjacent the table. In particular, claim 25 now recites in part that the base is mountable upon the support structure below the operating table so as to permit the linkage to be pre-configured to extend generally upward from the base to support the end effector, which manipulates tissues, adjacent the patient.

As the Examiner certainly knows and appreciates, a single cited art reference must teach each and every element of the claim to establish anticipation under 35 U.S.C. § 102. M.P.E.P. § 2131. The Court of Appeals for the Federal Circuit has held that, "the identical

invention must be shown in as complete detail as is contained in the claims." *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

The below operating table mounted robotic arm of claim 25 has not been shown or suggested in the Wang et al. reference. In particular, Fig. 1 and associated text in col. 2, lines 32-38 in the Wang et al. patent clearly indicate that the robotic arms 16, 18, and 20 are directly mounted to the operating table 14. In contrast, the present invention is structurally distinct by placement of the robotic arms below the operating table. See Figs. 9 and 10. This mounting position has several practical advantages, such as improved space utilization adjacent the operating table as the arms are disposed generally clear of the personnel-usage space so that passage space on each side of the table is unobstructed. Further, the below operating table mounted robotic arm allows for easy stowing of the arm under the table when the robotic system is not in use.

Applicants request, if the present rejection is maintained, that the Examiner show or explain where the Wang et al. reference teaches or suggest the distinct structural limitation of a base mountable upon the support structure below the operating table, as presently claimed in claim 25. "Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. . . . There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *Scripps Clinic & Research Found. v. Genentech Inc.*, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991). Absent a showing in a single prior art reference for the claimed below the operating table mounted robotic arm, Applicants respectfully request withdrawal of the 35 U.S.C. § 102 rejection and allowance of independent claim 25 (and dependent claims 26-36).

Independent claim 37 similarly recites in part that the support apparatus for supporting a first robotic surgical manipulator includes a base mountable upon the support structure below the operating table so as to permit the first support linkage to be pre-configured to extend generally upward from the base to support the first manipulator adjacent the patient. As such, claim 37 (and dependent claims 38-45) should be allowable for many of the reasons given above with respect to claim 25.

Independent claim 46 is directed to a method for preparing robotic surgery on a patient lying on an operating table within an operating room, the room having a support structure extending generally below the table and personnel-usable space adjacent the table. In particular, claim 46 requires in part that the base be mounted upon the support structure below the operating table so that the pre-positioned linkage extends generally upward from the base to support the manipulator adjacent the patient. In contrast, the Putnam reference teaches the prior art structure of a separate surgical instrument support apparatus or cart 10, wherein the surgical endoscope arm 18, 24 is mounted on the console 16 (of the support apparatus 10) which is parked adjacent the operating table 12. See Fig. 1 and col. 5, lines 24-46. As discussed above, the present invention of claim 46 provides a below the operating table mounted robotic arm which is advantageous over such prior art structures like Putnam in optimization of space utilization in the operating room. Hence, Applicants respectfully request withdrawal of the 35 U.S.C. § 102 rejection and allowance of independent claim 46.

Rejection Under 35 U.S.C. § 103

Claims 1, 2, 8-14, 47 and 48 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Wang et al. in view of U.S. Patent 5,876,325 issued to Mizuno et al. Claims 22-24 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Putman in view of Mizuno et al. Such rejections are traversed as follows.

Claim 1 is directed to a robotic surgery system for performing a surgical procedure on a patient lying on an operating table within an operating room. The room has a ceiling-height support structure extending generally above the table and personnel-usable space adjacent the table. In particular, the system includes a base mountable upon the ceiling-height support structure so as to permit the linkage to be pre-configured to extend generally downward from the mounting base to support the end effector, which manipulates tissues, adjacent the patient.

Applicants note the present rejection does not establish *prima facie* obviousness under 35 U.S.C. § 103 and M.P.E.P. §§ 2142-2143. Firstly, the Examiner has not established that the prior art references, alone or in combination, teach or suggest all the claim limitations.

M.P.E.P. § 2143.03; *In re Royka*, 180 U.S.P.Q. 580 (CCPA 1974). Secondly, no suggestion or motivation, either in the cited references or in the knowledge generally available to one of ordinary skill in the art, has been cited by the Examiner for the proposed combination of the reference teachings so as to produce the claimed invention. M.P.E.P. § 2143.01; *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

As the Examiner has already acknowledged, Wang et al. and Putnam fail to disclose a mounting base which is mountable upon the ceiling-height support structure so as to permit the linkage to be pre-configured to extend generally downward from the mounting base to support the end effector adjacent the patient. Office Action, pages 6 and 9. The Examiner then relies on Mizuno et al. for the teaching of a ceiling mount. However, a close review of this reference reveals that the Mizuno et al. patent at best teaches a ceiling mount for supporting the input controls used by a surgeon. In particular, Fig. 25A illustrates that a ceiling mount may be utilized for the master manipulator 161 instead of attaching the master manipulators 16 and 17 directly onto the surgeon's console 18 as depicted in the right side of Fig. 1. See also col. 18, lines 45-48; 62-65. Fig. 25B and the left side of Fig. 1 clearly illustrate that the slave/robotic manipulators 151, 3, 4 are fixed directly to the operating table 1 via bases 7 and 8. See also col. 8, lines 55-66. Applicants request, if the present rejection is maintained, that the Examiner show or explain where the cited references, alone or in combination, teaches or suggests a ceiling height mounted robotic (or slave) arm as presently claimed.

Secondly, based on Mizuno et al., Wang et al., or Putnam references, one of ordinary skill in the art would not have been reasonably motivated to combine any of these reference teachings to produce Applicants' claimed device. The Examiner asserts that "it would have been obvious to a person with ordinary skill in the art to configure the Wang et al. [or Putnam] robotic design to be mounted on a ceiling of a surgical room or the like, as disclosed by Mizuno et al." Office Action, pages 6 and 10. Applicants point out that the Examiner bears the initial burden of factually establishing and supporting any prima facie conclusion of obviousness. *In re Rinehart*, 189 U.S.P.Q. 143 (CCPA 1976); M.P.E.P. § 2142. If the Examiner does not produce a prima facie case, the Applicant is under no obligation to submit evidence of nonobviousness. *Id.* In the instant case, the Examiner has not pointed to any evidence in the

reference teachings themselves which teaches or suggest their combination. See *In re Zurko*, 59 U.S.P.Q.2d 1693 (Fed Cir. 2001) ([I]n a determination of patentability the Board cannot simply reach conclusion based on its own understanding or experience - or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings). Hindsight reconstruction is not permissible.

Per the references cited in this case, Applicants were the first to recognize the advantageous effects that may be achieved by having a mounting base which is mountable upon the ceiling-height support structure so as to permit the linkage to be pre-configured to extend generally downward from the mounting base to support the end effector adjacent the patient. As noted in the present application on page 7, lines 5-15, such a ceiling mounting position provides improved space utilization adjacent the operating table as the arms are disposed generally clear of the personnel-usage space so that passage space on each side of the table is unobstructed. Further, the ceiling height mounted robotic arm allows for easy stowing of the arm above the table when the robotic system is not in use. Furthermore, the ceiling mount allows the robotic arms to have a range of motion permitting access to cannula ports over a wide range of the patient's body, such as thoracic and abdominal ports. Still further, the ceiling mounting of the arms reduces the extent of sterile draping required. Hence, for the several reasons discussed above, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) be removed and that independent claim 1 (and dependent claims 2-12) be allowed.

Independent claims 13, 22, and 47 recite similar limitations of a ceiling height mounted robotic arm. As such, claims 13, 22, 47 (and dependent claims 14-21, 23-24, 48-52) should be allowable for many of the reasons given above with respect to claim 1. In addition, claim 47 should be further allowable as it is directed to a novel combination. In particular, claim 47 requires a first ceiling mounted base as well as a second below the operating table mounted base. None of the references of record show or suggest this additional limitation. As noted in the application, implementation of a dual base system on the ceiling and floor allows for dual surgeon telesurgical cooperative operations (for complicated and lengthy procedures, such as

Appl. No. 10/028,999
Amdt. dated December 10, 2003
Reply to Office Action of June 18, 2003

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multi-vessel coronary bypass graft procedures) to be effectively carried out. For this additional reason claim 47 (and dependent claims 48-52) should be allowable.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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